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| 10/733,783 | 12/11/2003 | Timo Kolehmainen | KOLS.075PA | 8178 |

7590 01/09/2008
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| EXAMINER |
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NEGRON, WANDA M

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| ART UNIT | PAPER NUMBER |
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2622

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01/09/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/733,783

Applicant(s)

KOLEHMAINEN ET AL.

Examiner

Wanda M. Negrón

Art Unit

2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 26 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/26/2007 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 4, 5, 10 and 22-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Ono (US Application Publication No. 2003/0020814 A1).

Regarding **claim 1**, Ono discloses an imaging device (see title) comprising an image memory (77) for storing images (see paragraph [0036]); at least one image capturing subsystem of a first type (see paragraph [0030] and figures 1 and 6-10),

comprising a lens arrangement, configured to produce images; at least one image capturing subsystem of a second type (see paragraph [0030] and figures 1 and 6-10), comprising a lens arrangement, having optical or light gathering properties different from the subsystem of first type (see paragraphs [0047]-[0051]), configured to produce an image, and a controller configured to select the subsystem with which an image is to be taken, i.e. a selector unit 31, wherein an image is captured and stored only with the selected subsystem (see paragraph [0031]).

Regarding **claims 4 and 5**, Ono discloses that the subsystem of the second type comprises a tele lens, i.e. a telephoto lens, or a wide-angle lens (see paragraph [0058]).

Regarding **claim 10**, Ono discloses that the image capturing subsystems comprise a lens system, i.e. lenses 220 and 222, and a sensor array configured to produce an electric signal, e.g. CCD imagers 30 (see paragraph [0030]), and the device comprises a processor (32, 60) (see paragraph [0031]) operationally connected to the sensor arrays (see figures 6-10) and configured to produce an image proportional to the electrical signal received from the sensor arrays (see paragraph [0031]).

Method **claim 22** is drawn to the method of using the corresponding apparatus claimed in claim 1. Therefore, method claim 22 corresponds to apparatus claim 1 and is rejected for the same reasons of anticipation as used above.

Regarding **claims 23 and 24**, Ono discloses that the image is captured in color via the image capturing subsystems of the first and the second type (see paragraph [0051]).

Claims 2, 3, 6 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable Ono (US Application Publication No. 2003/0020814 A1).

Regarding **claims 2, 3 and 6**, as mentioned in the discussion of claim 1 above, Ono discloses all the limitations of the parent claim. Official notice is taken that the concept and the advantage of using a macro, a high-magnification, or an anamorphically cylindrical lens are well known in the art. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to select the most appropriate lens, regarding its focal length, depth of field, and angle of view, for the imaging application required by the user, e.g. videoconferencing, portrait photography, surveillance, etc., in order to obtain an image with the second type image capturing subsystem taught by Ono.

Regarding **claim 8**, Official notice is taken that the concept and the advantage of incorporating camera systems in phone applications, e.g. videophones and camera phones, is well known in the art. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a videoconferencing resolution, i.e. a videophone resolution, in the second type image capturing subsystem taught by Ono when incorporating the imaging system taught by Ono in a phone device.

Regarding **claim 9**, Official notice is taken that CIF and QCIF are well-known camera resolutions for videoconferencing applications. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use either CIF or QCIF in a videophone application since CIF/QCIF are the standards for videoconferencing, e.g. videophone, applications.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ono as applied to claims 1-6 and 8-10 above, and further in view of Smith (US Patent No. 5,926,218).

Regarding **claim 7**, as mentioned in the discussion of claim 1 above, Ono teaches all the limitations of the parent claim. In addition, Ono discloses that the image capturing subsystem of the second type comprises a color matrix filter (see paragraph [0051, lines 14-19). Ono, however, fails to explicitly disclose that the controller is configured to take images with the subsystems in sequence to capture fast motion objects.

The concept and the advantage of capturing leading/trailing images by controlling a second image capturing subsystem to capture said leading/trailing images is well-known in the art, as evidenced by Smith (see col. 4, lines 59-64). It would have been obvious to one having ordinary skill in the art at the time the invention was made to control the second subsystem taught by Ono in order to capture leading/trailing images of the image captured by the first subsystem because it would enable the capability of capturing image data of moving objects.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ono as applied to claims 1-6 and 8-10 above, and further in view of Denyer (WO 93/11631).

Regarding **claim 11**, as mentioned in the discussion of claims 1 and 10 above, Ono discloses all the limitations of the parent claim. However, Ono does not teach that the imaging device comprises a sensor array divided between image capturing subsystem types, i.e. an image sensor with various sensing regions disposed on the same plane.

Denyer, on the other hand, teaches two or more cameras on one chip having the sensors in the same plane (see page 2, lines 11-18), thus obtaining cameras that are easy to calibrate while minimizing alignment problems (see page 2, lines 13-25).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to implement the sensor array disclosed by Denyer in the imaging system taught by Ono in order to obtain a camera system that is easy to calibrate and to minimize alignment problems.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ono as applied to claims 1-10 above, and further in view of Inoue et al. (US Application Publication No. 2002/0089698 A1).

Regarding **claim 12**, as mentioned in the discussion of claim 1 above, Ono discloses all the limitations of the parent claim. However, Ono does not teach that the device comprises a lenslet array.

The concept and the advantage of integrally forming a lenslet array with at least four lenses is well-known in the art, as evidenced by Inoue et al. (see figures 5 -6, and paragraph [0043]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a lenslet array instead of a multiple discrete lens system because "it is sufficient to install only the unified four image formation lenses", "thereby simple structure and lightening is realized" (see Inoue, paragraph [0043]).

Claims 13-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ono as applied to claims 1-10 above, in view of Inoue, and further in view of Denyer (WO 93/11631).

Regarding **claim 13**, as mentioned in the discussion of claims 1 and 12 above, Ono, as modified by Inoue et al., discloses all the limitations of the parent claim. In addition, Ono as modified by Inoue teaches that the image capturing subsystem of the second type device comprises one of the lenses of a lenslet array, i.e. one of the four lenslets comprises the image capturing subsystem of the second type device. Ono in view of Inoue et al., however, fails to disclose that the lens arrangement of the image capturing subsystem of the first type device comprises three lenses from the lenslet array, and a portion of the sensor array.

The concept and the advantage of having a lens subsystem comprising three lenses, i.e. the red, green and blue lenses, and a portion of a sensor array, interpreted as three sensing areas disposed contiguously in the same plane is well-known in the art, as evidenced by Denyer (see figure 1). It would have been obvious to one having

ordinary skill in the art at the time the invention was made to have the image capturing subsystem of the first type be a three lens subsystem as taught by Denyer because it would result in a camera that is easy to calibrate while minimizing alignment problems (see page 2, lines 13-25). It is noted that including a fourth sensing area, with its respective filter, to the sensor configuration taught by Denyer would have been recognized as being within the level of ordinary skill in the art.

Regarding **claim 14**, Ono in view of Inoue et al. and Denyer discloses that the image capturing subsystem of a first type is configured to produce a color image (see Denyer, page 4, lines 27-32) and the image capturing subsystem of the second type is configured to produce an image (see Ono, paragraph [0031]).

Regarding **claims 15 and 16**, Ono in view of Inoue et al. and Denyer discloses that the lens arrangement of the image capturing subsystem of the first type comprises a red, green and blue color filter or a cyan, magenta and yellow color filter, each associated with a lens (see Denyer, page 4, lines 27-32).

Regarding **claim 17**, Ono in view of Inoue et al. and Denyer discloses that the lens arrangement of the subsystem of the second type comprises a color filter array that corresponds to a Bayer matrix (see Ono, paragraphs [0051]-[0052]).

Regarding **claim 18**, Ono in view of Inoue et al. and Denyer does not explicitly teach that the subsystems of the first and the second type are configured to produce images in the same color space. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the image capturing subsystems of the first and the second type configured to produce images in the same color space because the same color correcting matrix (see Denyer, figure 4) could be used to correct the colors of the images obtained from both subsystems, simplifying the design of the imaging device.

Regarding **claims 19 and 20**, Ono discloses an imaging device (see title) comprising an image memory (77) for storing images (see paragraph [0036]); at least one image capturing subsystem of a first type (see paragraph [0030] and figures 1 and 6-10), comprising a lens arrangement, configured to produce images; at least one image capturing subsystem of a second type (see paragraph [0030] and figures 1 and 6-10), comprising a lens arrangement, having optical or light gathering properties different from the subsystem of first type (see paragraphs [0047]-[0051]), configured to produce an image, and a controller configured to select the subsystem with which an image is to be taken, i.e. a selector unit 31, wherein an image is captured and stored only with the selected subsystem (see paragraph [0031]). However, Ono does not teach that the device comprises a lenslet array.

The concept and the advantage of integrally forming a lenslet array with at least four lenses is well-known in the art, as evidenced by Inoue et al. (see figures 5 -6, and

paragraph [0043]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a lenslet array instead of a multiple discrete lens system because "it is sufficient to install only the unified four image formation lenses", "thereby simple structure and lightening is realized" (see Inoue, paragraph [0043]).

In addition, Ono as modified by Inoue teaches that the image capturing subsystem of the second type device comprises one of the lenses of a lenslet array, i.e. one of the four lenslets comprises the image capturing subsystem of the second type device. Ono in view of Inoue et al., however, fails to disclose that the lens arrangement of the image capturing subsystem of the first type device comprises three lenses from the lenslet array, and a portion of the sensor array.

The concept and the advantage of having a lens subsystem comprising three lenses, i.e. the red, green and blue lenses, and a portion of a sensor array, interpreted as three sensing areas disposed contiguously in the same plane is well-known in the art, as evidenced by Denyer (see figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the image capturing subsystem of the first type be a three lens subsystem as taught by Denyer because it would result in a camera that is easy to calibrate while minimizing alignment problems (see page 2, lines 13-25). It is noted that including a fourth sensing area, with its respective filter, to the sensor configuration taught by Denyer would have been recognized as being within the level of ordinary skill in the art.

Regarding **claim 21**, Ono in view of Inoue et al. and Denyer teach that the first type subsystem produces a color image, i.e. a composite image obtained from the monochromatic data (see Denyer, page 4, lines 27-32).

Response to Arguments

Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Ohmura (US Patent No. 4,527,874), Fantone (US Patent No. 6,101,334), and Chen (US Patent No. 6,643,457 B2) disclose a camera having multiple lenses wherein the user mechanically selects one of the multiple lenses to perform an image capture operation.
- Von Hoessle (US Patent No. 5,051,830) discloses an integrally-formed dual focal length lens system.
- Ansari et al. (US Patent No. 6,288,742 B1) teach a digital camera having two optical paths and two sensors wherein only one optical path is selected when performing an image-capture operation.

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1/7/08

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wanda M. Negrón whose telephone number is (571) 270-1129. The examiner can normally be reached on Mon-Fri 6:30 am - 4:00 pm alternate Fri off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Wanda M. Negrón/

Examiner, Art Unit 2622
January 7, 2008



DAVID OMETZ
SUPERVISORY PATENT EXAMINER